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## METHOD FOR FORMING SILICON FILMS WITH TRACE IMPURITIES

## **ABSTRACT OF THE INVENTION**

5 A method is provided for forming silicon films with a  
controlled amount of trace impurities. The method comprises:  
forming a target including silicon and a first concentration of a first  
impurity; supplying a substrate; and, sputter depositing a film of  
silicon on the substrate including a second concentration of the first  
10 impurity. The first impurity in the target can be a transition metal,  
phosphorous, or germanium. When the first impurity is Ni, the first  
concentration of nickel in the target is in the range of 0.01 to 0.5  
percentage by atomic weight (at %). Preferably the range is 0.05 to  
0.2 at %. Then, the second concentration of Ni in the deposited  
15 silicon film is in the range of 0.01 to 0.5 at %.